



## SEQUENCE LISTING

<110> Fader, Gary M.  
Jung, Woosuk  
Brian, McGonigle  
Odell, Joan T.  
Yu, Xiaodan

<120> Nucleic Acid Fragments Encoding Isoflavone Synthase

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<140> 09/857.581

<141> 2001-05-06

<150> PCT/US00/01,772

<151> 2000-01-26

<150> 60/117,769

<151> 1999-01-27

<150> 60/144,783

<151> 1990-07-20

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<151> 1999-09-24

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<170> PatentIn version 3.3

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Lys Lys His Gly Pro Leu Phe Ser Leu Ser Phe Gly Ser Met Pro Thr
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 Gly Ala Ala Cys Gly Gly Ala Gly Ala Ala Gly Thr Thr Gly Thr Thr  
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 Gly Ala Cys Gly Ala Ala Gly Thr Thr Gly Ala Cys Ala Cys Thr Cys  
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1055						1060					1065			
Cys	Ala	Gly	Thr	Gly	Gly	Thr	Cys	Ala	Ala	Ala	Ala	Gly	Ala	Ala
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1085						1090					1095			
Gly	Thr	Gly	Ala	Gly	Ala	Thr	Thr	Ala	Ala	Thr	Gly	Gly	Gly	Thr
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1115						1120					1125			
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1130						1135					1140			
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1160						1165					1170			
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1295						1300					1305			
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 <212> DNA  
 <213> *Vicia villosa*

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 aacttctcca ctacgcactc atcgacctct ccaaaaaaca tggtccttta ttctctctct 180  
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 <213> Vicia villosa

<400> 18

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			20					25					30		
His	Leu	His	Leu	Leu	Lys	Asp	Lys	Leu	Leu	His	Tyr	Ala	Leu	Ile	Asp
		35					40					45			
Leu	Ser	Lys	Lys	His	Gly	Pro	Leu	Phe	Ser	Leu	Tyr	Phe	Gly	Ser	Met
	50					55					60				
Pro	Thr	Val	Val	Ala	Ser	Thr	Pro	Glu	Leu	Phe	Lys	Leu	Phe	Leu	Gln
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Thr	His	Glu	Ala	Thr	Ser	Phe	Asn	Thr	Arg	Phe	Gln	Thr	Ser	Ala	Ile
				85					90					95	
Arg	Arg	Leu	Thr	Tyr	Asp	Ser	Leu	Val	Ala	Met	Val	Pro	Phe	Gly	Pro
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Tyr	Trp	Lys	Phe	Val	Arg	Lys	Leu	Ile	Met	Asn	Asp	Leu	Leu	Asn	Ala
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Thr	Thr	Val	Asn	Lys	Leu	Arg	Pro	Leu	Arg	Thr	Gln	Gln	Ile	Arg	Lys
	130					135					140				
Phe	Leu	Arg	Val	Met	Ala	Gln	Gly	Ala	Glu	Ala	Gln	Lys	Pro	Leu	Asp
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Leu	Thr	Glu	Glu	Leu	Leu	Lys	Trp	Thr	Asn	Ser	Thr	Ile	Ser	Met	Met
				165					170					175	
Met	Leu	Gly	Glu	Ala	Glu	Glu	Ile	Arg	Asp	Ile	Ala	Arg	Glu	Val	Leu
			180					185					190		
Lys	Ile	Tyr	Gly	Glu	Tyr	Ser	Leu	Thr	Asp	Phe	Ile	Trp	Pro	Leu	Lys
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His	Leu	Lys	Val	Gly	Lys	Tyr	Glu	Lys	Arg	Ile	Asp	Asp	Ile	Leu	Asn
	210					215					220				
Lys	Phe	Asp	Pro	Val	Val	Glu	Arg	Val	Ile	Lys	Lys	Arg	Arg	Glu	Ile
225					230					235				240	

Val Arg Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly  
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 Val Phe Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Thr Glu  
 260 265 270  
 Ile Lys Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe  
 275 280 285  
 Ser Ala Gly Ile Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala  
 290 295 300  
 Glu Leu Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val  
 305 310 315 320  
 Tyr Ser Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln  
 325 330 335  
 Asn Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His  
 340 345 350  
 Pro Pro Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile  
 355 360 365  
 Asn Gly Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp  
 370 375 380  
 Gln Val Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg  
 385 390 395 400  
 Pro Glu Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu  
 405 410 415  
 Asp Leu Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg  
 420 425 430  
 Gly Met Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu  
 435 440 445  
 Leu Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln  
 450 455 460  
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Ala Arg Ile

<210> 19

<211> 1501

<212> DNA

<213> Lens culinaris

<400> 19

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actttggctc	catgccaacc	gttggtgcct	ccacaccaga	attgttcaag	ctcttcctcc	240
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cctatgatag	ctcagtggcc	atggttccat	tcggacctta	ctggaagttc	gtgaggaagc	360
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<210> 20

<211> 499

<212> PRT

<213> Lens culinaris

<400> 20

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			20					25					30		

His	Pro	His	Leu	Leu	Lys	Asp	Lys	Leu	Leu	His	Tyr	Ala	Leu	Ile	Asp
		35					40					45			

Leu	Ser	Lys	Lys	His	Gly	Pro	Leu	Phe	Ser	Leu	Tyr	Phe	Gly	Ser	Met
	50					55					60				

Pro	Thr	Val	Val	Ala	Ser	Thr	Pro	Glu	Leu	Phe	Lys	Leu	Phe	Leu	Gln
65					70					75					80

Thr	His	Glu	Ala	Thr	Ser	Phe	Asn	Thr	Arg	Phe	Gln	Thr	Ser	Ala	Ile
				85					90					95	

Arg	Arg	Leu	Thr	Tyr	Asp	Ser	Ser	Val	Ala	Met	Val	Pro	Phe	Gly	Pro
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Tyr	Trp	Lys	Phe	Val	Arg	Lys	Leu	Ile	Met	Asn	Asp	Leu	Leu	Asn	Ala
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Thr	Thr	Val	Asn	Lys	Leu	Arg	Pro	Leu	Arg	Thr	Gln	Gln	Ile	Arg	Lys
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Phe	Leu	Arg	Val	Met	Ala	Gln	Ser	Ala	Glu	Ala	Gln	Lys	Pro	Leu	Asp
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Val	Thr	Glu	Glu	Leu	Leu	Lys	Trp	Thr	Asn	Ser	Thr	Ile	Ser	Met	Met	
				165					170					175		
Met	Leu	Gly	Glu	Ala	Glu	Glu	Ile	Arg	Asp	Ile	Ala	Arg	Glu	Val	Leu	
			180					185					190			
Lys	Ile	Phe	Gly	Glu	Tyr	Ser	Leu	Thr	Asp	Phe	Ile	Trp	Pro	Leu	Lys	
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Ile	Lys	Ile	Thr	Lys	Glu	Gln	Ile	Lys	Gly	Leu	Val	Val	Asp	Phe	Phe	
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Ser	Ala	Gly	Thr	Asp	Ser	Thr	Ala	Val	Ala	Thr	Glu	Trp	Ala	Leu	Ala	
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Tyr	Ser	Val	Val	Gly	Lys	Asp	Ile	Leu	Val	Asp	Glu	Val	Asp	Thr	Gln	
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Asn	Leu	Pro	Tyr	Ile	Arg	Ala	Ile	Val	Lys	Glu	Thr	Phe	Arg	Met	His	
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Pro	Pro	Leu	Pro	Val	Val	Lys	Arg	Lys	Cys	Thr	Glu	Glu	Cys	Glu	Ile	
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	370					375					380					
Gln	Val	Gly	Arg	Asp	Pro	Lys	Tyr	Trp	Asp	Arg	Pro	Ser	Glu	Phe	Arg	
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Pro	Glu	Arg	Phe	Leu	Glu	Thr	Gly	Ala	Glu	Gly	Glu	Ala	Gly	Pro	Leu	
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Asp	Leu	Arg	Gly	Gln	His	Phe	Gln	Leu	Leu	Pro	Phe	Gly	Ser	Gly	Arg	
			420					425					430			
Arg	Met	Cys	Pro	Gly	Val	Asn	Leu	Ala	Thr	Ser	Gly	Met	Ala	Thr	Leu	
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Leu	Ala	Ser	Leu	Ile	Gln	Cys	Phe	Asp	Leu	Gln	Val	Leu	Gly	Pro	Gln	
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Gly	Gln	Ile	Leu	Lys	Gly	Asp	Asp	Ala	Lys	Val	Ser	Met	Glu	Glu	Arg	
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Ala Arg Ile

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<211> 1501  
<212> DNA  
<213> Lens culinaris

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<210> 22  
<211> 499  
<212> PRT  
<213> Lens culinaris

<400> 22  
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His Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp  
35 40 45  
Leu Ser Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met  
50 55 60  
Pro Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln  
65 70 75 80

Thr	His	Glu	Ala	Thr	Ser	Phe	Asn	Thr	Arg	Phe	Gln	Thr	Ser	Ala	Ile	
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Arg	Arg	Leu	Thr	Tyr	Asp	Ser	Ser	Val	Ala	Met	Val	Pro	Phe	Gly	Pro	
			100					105					110			
Tyr	Trp	Lys	Phe	Val	Arg	Lys	Leu	Ile	Met	Asn	Asp	Leu	Leu	Asn	Ala	
		115					120					125				
Thr	Thr	Val	Asn	Lys	Leu	Arg	Pro	Leu	Arg	Thr	Gln	Gln	Ile	Arg	Lys	
		130				135					140					
Phe	Leu	Arg	Val	Met	Ala	Gln	Gly	Ala	Glu	Ala	Gln	Lys	Pro	Leu	Asp	
145					150					155					160	
Leu	Thr	Glu	Glu	Leu	Leu	Lys	Trp	Thr	Asn	Ser	Thr	Ile	Ser	Met	Met	
				165					170					175		
Val	Leu	Gly	Glu	Ala	Glu	Glu	Ile	Arg	Asp	Ile	Ala	Arg	Glu	Val	Leu	
			180					185					190			
Lys	Ile	Phe	Gly	Glu	Tyr	Ser	Leu	Thr	Asp	Phe	Ile	Trp	Pro	Leu	Lys	
		195					200					205				
His	Leu	Lys	Val	Gly	Lys	Tyr	Glu	Lys	Arg	Ile	Asp	Asp	Ile	Leu	Asn	
	210					215					220					
Lys	Phe	Asp	Pro	Val	Val	Glu	Arg	Val	Ile	Lys	Lys	Arg	Arg	Glu	Ile	
225					230					235					240	
Val	Arg	Arg	Arg	Lys	Asn	Gly	Glu	Val	Val	Glu	Gly	Glu	Val	Ser	Gly	
				245					250					255		
Val	Phe	Leu	Asp	Thr	Leu	Leu	Glu	Phe	Ala	Glu	Asp	Glu	Thr	Met	Glu	
			260					265						270		
Ile	Lys	Ile	Thr	Lys	Asp	His	Ile	Lys	Gly	Leu	Val	Val	Asp	Phe	Phe	
		275					280						285			
Ser	Ala	Gly	Thr	Asp	Ser	Thr	Ala	Val	Ala	Thr	Glu	Trp	Ala	Leu	Ala	
	290					295					300					
Glu	Leu	Ile	Asn	Asn	Pro	Lys	Val	Leu	Glu	Lys	Ala	Arg	Glu	Glu	Val	
305					310					315					320	
Tyr	Ser	Val	Val	Gly	Lys	Asp	Arg	Leu	Val	Asp	Glu	Val	Asp	Thr	Gln	
				325					330					335		
Asn	Leu	Pro	Tyr	Ile	Arg	Ala	Ile	Val	Lys	Glu	Thr	Phe	Arg	Met	His	
			340					345					350			
Pro	Pro	Leu	Pro	Val	Val	Lys	Arg	Lys	Cys	Thr	Glu	Glu	Cys	Glu	Ile	
		355					360						365			
Asn	Gly	Cys	Val	Thr	Pro	Glu	Gly	Ala	Leu	Ile	Leu	Phe	Asn	Val	Trp	
	370					375					380					
Gln	Val	Gly	Arg	Asp	Pro	Lys	Tyr	Trp	Asp	Arg	Pro	Ser	Glu	Phe	Arg	
385					390					395					400	

Pro Glu Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu  
405 410 415

Asp Leu Arg Gly Arg His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg  
420 425 430

Arg Met Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu  
435 440 445

Leu Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln  
450 455 460

Gly Gln Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg  
465 470 475 480

Ala Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu  
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Ala Arg Ile

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<211> 1566  
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<213> Phaseolus aureus

<400> 23

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gttggtgcct	ccacaccaga	attgttcaag	ctcttcctcc	aaacgcacga	ggcaacttcc	300
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tctaaa						1566

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<211> 522  
<212> PRT  
<213> Phaseolus aureus

<400> 24

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Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly His Leu  
35 40 45

His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp Leu Ser  
50 55 60

Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met Pro Thr  
65 70 75 80

Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Thr His  
85 90 95

Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile Arg Arg  
100 105 110

Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro Tyr Trp  
115 120 125

Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala Thr Thr  
130 135 140

Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys Phe Leu  
145 150 155 160

Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp Leu Thr  
165 170 175

Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met Met Leu  
180 185 190

Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys Ile  
195 200 205

Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys His Leu  
210 215 220

Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys Phe  
225 230 235 240

Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val Arg  
245 250 255

Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly Val Phe  
260 265 270

Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu Ile Lys  
275 280 285

Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe Ser Ala  
290 295 300

Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala Glu Leu  
305 310 315 320

Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Ala Tyr Ser  
 325 330 335  
 Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn Leu  
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 Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro  
 355 360 365  
 Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn Gly  
 370 375 380  
 Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp Gln Val  
 385 390 395 400  
 Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg Pro Glu  
 405 410 415  
 Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu Asp Leu  
 420 425 430  
 Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg Met  
 435 440 445  
 Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu Leu Ala  
 450 455 460  
 Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln  
 465 470 475 480  
 Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly  
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 cgtcttccct tcataggaca ccttcatctc ttaaaagaca aacttctcca ctacgcgctc 180  
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 gttgttgctt ccacaccaga attgttcaag ctcttctctc aaacgcacga ggcaacttcc 300  
 ttcaacacaa ggttccaaac ctcagccata agacgcctca cctatgatag ctcagtggcc 360  
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<211> 521

<212> PRT

<213> Phaseolus aureus

<400> 26

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Pro	Asn	Pro	Pro	Ser	Pro	Lys	Pro	Arg	Leu	Pro	Phe	Ile	Gly	His	Leu	35	40	45	
His	Leu	Leu	Lys	Asp	Lys	Leu	Leu	His	Tyr	Ala	Leu	Ile	Asp	Leu	Ser	50	55	60	
Lys	Lys	His	Gly	Pro	Leu	Phe	Ser	Leu	Tyr	Phe	Gly	Ser	Met	Pro	Thr	65	70	75	80
Val	Val	Ala	Ser	Thr	Pro	Glu	Leu	Phe	Lys	Leu	Phe	Leu	Gln	Thr	His	85	90	95	
Glu	Ala	Thr	Ser	Phe	Asn	Thr	Arg	Phe	Gln	Thr	Ser	Ala	Ile	Arg	Arg	100	105	110	
Leu	Thr	Tyr	Asp	Ser	Ser	Val	Ala	Met	Val	Pro	Phe	Gly	Pro	Tyr	Trp	115	120	125	
Lys	Phe	Val	Arg	Lys	Leu	Ile	Met	Asn	Asp	Leu	Leu	Asn	Ala	Thr	Thr	130	135	140	
Val	Asn	Lys	Leu	Arg	Pro	Leu	Arg	Thr	Gln	Gln	Ile	Arg	Lys	Phe	Leu	145	150	155	160
Arg	Ala	Met	Ala	Gln	Gly	Ala	Glu	Ala	Gln	Lys	Pro	Leu	Asp	Leu	Thr	165	170	175	
Glu	Glu	Leu	Leu	Lys	Trp	Thr	Asn	Ser	Thr	Ile	Ser	Met	Met	Met	Leu	180	185	190	
Gly	Glu	Ala	Glu	Glu	Ile	Arg	Asp	Ile	Ala	Arg	Glu	Val	Leu	Lys	Ile	195	200	205	

Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys His Leu  
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 Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys Phe  
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 Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val Arg  
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 Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly Val Phe  
 260 265 270  
 Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu Ile Lys  
 275 280 285  
 Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe Ser Ala  
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 Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala Glu Leu  
 305 310 315 320  
 Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val Tyr Ser  
 325 330 335  
 Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn Leu  
 340 345 350  
 Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro  
 355 360 365  
 Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn Gly  
 370 375 380  
 Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp Gln Val  
 385 390 395 400  
 Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg Pro Glu  
 405 410 415  
 Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu Asp Leu  
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 Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg Met  
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 Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu Leu Ala  
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 Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln  
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 Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly  
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 tcttaa 1566

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 <211> 521  
 <212> PRT  
 <213> Phaseolus aureus

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 Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly His Leu  
 35 40 45  
 His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp Leu Ser  
 50 55 60  
 Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met Pro Thr  
 65 70 75 80  
 Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Thr His  
 85 90 95  
 Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile Arg Arg  
 100 105 110

Leu	Thr	Tyr	Asp	Ser	Ser	Val	Ala	Met	Val	Pro	Phe	Gly	Pro	Tyr	Trp	115	120	125
Lys	Phe	Val	Arg	Lys	Leu	Ile	Met	Asn	Asp	Leu	Leu	Asn	Ala	Thr	Thr	130	135	140
Val	Asn	Lys	Leu	Arg	Pro	Leu	Arg	Thr	Gln	Gln	Ile	Arg	Lys	Phe	Leu	145	150	155
Arg	Val	Met	Ala	Gln	Gly	Ala	Glu	Ala	Gln	Lys	Pro	Leu	Asp	Leu	Thr	165	170	175
Glu	Glu	Leu	Leu	Lys	Trp	Thr	Asn	Ser	Thr	Ile	Ser	Met	Met	Met	Leu	180	185	190
Gly	Glu	Ala	Glu	Glu	Ile	Arg	Asp	Ile	Ala	Arg	Glu	Val	Leu	Lys	Ile	195	200	205
Phe	Gly	Glu	Tyr	Ser	Leu	Thr	Asp	Phe	Ile	Trp	Pro	Leu	Lys	His	Leu	210	215	220
Lys	Val	Gly	Lys	Tyr	Glu	Lys	Arg	Ile	Asp	Asp	Ile	Leu	Asn	Lys	Phe	225	230	235
Asp	Pro	Val	Val	Glu	Arg	Val	Ile	Lys	Lys	Arg	Arg	Glu	Ile	Val	Arg	245	250	255
Arg	Arg	Lys	Asn	Gly	Glu	Val	Val	Glu	Gly	Glu	Val	Ser	Gly	Val	Phe	260	265	270
Leu	Asp	Thr	Leu	Leu	Glu	Phe	Ala	Glu	Asp	Glu	Thr	Thr	Glu	Ile	Lys	275	280	285
Ile	Thr	Lys	Asp	His	Ile	Lys	Gly	Leu	Val	Val	Asp	Phe	Phe	Ser	Ala	290	295	300
Gly	Thr	Asp	Ser	Thr	Ala	Val	Ala	Thr	Glu	Trp	Ala	Leu	Ala	Glu	Leu	305	310	315
Ile	Asn	Asn	Pro	Lys	Val	Leu	Glu	Lys	Ala	Arg	Glu	Glu	Val	Tyr	Ser	325	330	335
Val	Val	Gly	Lys	Asp	Arg	Leu	Val	Asp	Glu	Val	Asp	Thr	Gln	Asn	Leu	340	345	350
Pro	Tyr	Ile	Arg	Ala	Ile	Val	Lys	Glu	Thr	Phe	Arg	Met	His	Pro	Pro	355	360	365
Leu	Pro	Val	Val	Lys	Arg	Lys	Cys	Thr	Glu	Glu	Cys	Glu	Ile	Asn	Gly	370	375	380
Tyr	Val	Ile	Pro	Glu	Gly	Ala	Leu	Ile	Leu	Phe	Asn	Val	Trp	Gln	Val	385	390	395
Gly	Arg	Asp	Pro	Lys	Tyr	Trp	Asp	Arg	Pro	Ser	Glu	Phe	Arg	Pro	Glu	405	410	415
Arg	Phe	Leu	Glu	Thr	Gly	Ala	Glu	Gly	Glu	Ala	Arg	Pro	Leu	Asp	Leu	420	425	430

Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg Met  
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Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu Leu Ala  
450 455 460

Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln  
465 470 475 480

Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly  
485 490 495

Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala Arg  
500 505 510

Ile Gly Val Ala Ser Lys Leu Leu Ser  
515 520

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cgtcttcctt tcataggaca ccttcatctc ttaaaagaca aacttctcca ctacgcactc 180  
atcgacctct ccaaaaaaca tggtccttta ttctctctct actttggctc catgcccaacc 240  
gttgttgccct ccacaccaga attgttcaag ctcttctctc aaacgcacga ggcaacttcc 300  
ttcaacacaa ggttccaaac ctccagccata agacgcctca cctatgatag ctccagtggcc 360  
atggttcctt tcggacctta ctggaagttc gtgaggaagc tcatcatgaa cgaccttctc 420  
aacgccacca ctgtaaacaa gttgaggcct ttgaggaccc aacagatccg caagtccctt 480  
agggttatgg cccaaggcgc agaggcacag aagcccttg acttgaccga ggagcttctg 540  
aaatggacca acagcaccat ctccatgatg atgctcgcg aggctgagga gatcagagac 600  
atcgctcgcg aggttcttaa gatctttggc gaatacagcc tccactgactt catctggcca 660  
ttgaagcatc tcaaggttgg aaagtatgag aagaggatcg acgacatctt gaacaagttc 720  
gacctgtctg ttgaaagagt catcaagaag cgccgtgaga tcgtgaggag gagaaagaac 780  
ggagaggttg ttgagggtga ggtcagcggg gttttccttg acactttgct tgaattcgct 840  
gaggatgaga ccatggagat caaaatcacc aaggaccaca tcaagggctt tgttgctcgac 900  
tttttctcgg caggaacaga ctccacagcg gaggcaacag agtgggcatt ggcagaactc 960  
atcaacaatc ctaagggtgtt ggaaaaggct cgtgaggagg tctacagtgt tgtgggaaag 1020  
gacagacttg tggacgaagt tgacactcaa aaccttctt acattagagc aatcgtgaag 1080  
gagacattcc gcatgcaccc gccactccca gtggtcaaaa gaaagtgcac agaagagtgt 1140  
gagattaatg gatattgtat ccagagggga gcattgattc tcttcaatgt atggcaagta 1200  
ggaagagacc ccaaatactg ggacagacca tcggagtctc gtcctgagag gttcctagag 1260  
acaggggctg aaggggaagc aaggcctctt gatcttaggg gacaacattt tcaacttctc 1320  
ccatttgggt ctgggaggag aatgtgccct ggagtcaatc tggctacttc gggaatggca 1380  
acacttcttg catctcttat tcagtgtctt gacttgcaag tgctgggtcc acaaggacag 1440  
atattgaagg gtggtgacgc caaagtttag atggaagaga gagccggcct cactgttcca 1500  
agggcacata gtcttgtctg tgttccactt gcaaggatcg gcgttgcatc taaactcctt 1560  
tcttaa 1566

<210> 30  
<211> 521  
<212> PRT  
<213> Phaseolus aureus

<400> 30  
Met Leu Leu Glu Leu Ala Leu Gly Leu Leu Val Leu Ala Leu Phe Leu  
1 5 10 15  
His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg His Leu  
20 25 30  
Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly His Leu  
35 40 45  
His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp Leu Ser  
50 55 60  
Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met Pro Thr  
65 70 75 80  
Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Thr His  
85 90 95  
Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile Arg Arg  
100 105 110  
Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro Tyr Trp  
115 120 125  
Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala Thr Thr  
130 135 140  
Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys Phe Leu  
145 150 155 160  
Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp Leu Thr  
165 170 175  
Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met Met Leu  
180 185 190  
Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys Ile  
195 200 205  
Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys His Leu  
210 215 220  
Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys Phe  
225 230 235 240  
Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val Arg  
245 250 255  
Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly Val Phe  
260 265 270  
Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu Ile Lys  
275 280 285  
Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe Ser Ala  
290 295 300  
Gly Thr Asp Ser Thr Ala Glu Ala Thr Glu Trp Ala Leu Ala Glu Leu  
305 310 315 320

Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val Tyr Ser  
 325 330 335  
 Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn Leu  
 340 345 350  
 Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro  
 355 360 365  
 Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn Gly  
 370 375 380  
 Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp Gln Val  
 385 390 395 400  
 Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg Pro Glu  
 405 410 415  
 Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu Asp Leu  
 420 425 430  
 Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg Met  
 435 440 445  
 Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu Leu Ala  
 450 455 460  
 Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln  
 465 470 475 480  
 Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly  
 485 490 495  
 Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala Arg  
 500 505 510  
 Ile Gly Val Ala Ser Lys Leu Leu Ser  
 515 520

<210> 31  
 <211> 1566  
 <212> DNA  
 <213> *Trifolium pratense*

<400> 31  
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 acaccactg caaaatcaaa agcacttcgc catctcccaa accaccaag cccaaagcct 120  
 cgtcttcct tcataggaca cttcatctc ttaaaagaca aacttctcca ctacgcactc 180  
 atcgacctct ccaaaaaaca tgggtccctta ttctctctct actttggctc catgccaaacc 240  
 gttgttgctt ccacaccaga attgttcaag ctcttctctc aaacgcacga ggcaacttcc 300  
 ttcaacacaa ggttccaaac ctcagccata agacgcctca cctatgatag ctcaagtggcc 360  
 atggttccca tcggaccta ctggaagttc gtgaggaagc tcatcatgaa cgaccttctc 420  
 aacgccacca ctgtaaacaa gttgaggcct ttgaggaccc aacagatccg caagttcctt 480  
 agggttatgg cccaaggcgc agaggcacag aagccccttg acttgaccga ggagcttctg 540  
 aaatggacca acagcaccat ctccatgatg atgctcggcg aggctgagga gatcagagac 600  
 atcgctcgcg aggttcttaa gatctttggc gaatacagcc tcaactgactt catctggcca 660  
 ttgaagcatc tcaaggttgg aaagtatgag aagaggatcg acgacatctt gaacaagtgc 720  
 gacctgtcgt ttgaaagagt catcaagaag cgccgtgaga tcgtgaggag gagaaagaac 780  
 ggagagggtg atgagggtga ggtcagcggg gttttccttg acactttgct tgaattcgct 840

gaggatgaga	ccacggagat	caaaatcacc	aaggaccaca	tcaaggggtct	tggtgtcgac	900
tttttctcgg	cagggacaga	ctccacagcg	gtggcaacag	agtgggcatt	ggcagaactc	960
atcaacaatc	ctaaggtggt	ggaaaaggct	cgtgaggagg	tctacagtgt	tggtgggaaag	1020
gacagacttg	tggaaggaag	tgacactcaa	aaccttcctt	acattagagc	aatcgtgaag	1080
gagacattcc	gcatgcaccc	gccactccca	gtggtcaaaa	gaaagtgcac	agaagagtgt	1140
gagattaatg	gatatgtgat	cccagagggga	gcattgattc	tcttcaatgt	atggcaagta	1200
ggaagagacc	ccaaatactg	ggacagacca	tcggagttcc	gtcctgagag	gttccttagag	1260
acaggggctg	aaggggaagc	aaggcctctt	gatcttaggg	gacaacattt	tcaacttctc	1320
ccatttgggg	ctgggaggag	aatgtgccct	ggagtcaatc	tggtacttc	gggaatggca	1380
acacttcttg	catctcttat	tcagtgtctt	gacttgcaag	tgctgggtcc	acaaggacag	1440
atattgaagg	gtggtgacgc	caaagttagc	atggaagaga	gggccggcct	cactgttcca	1500
agggcacata	gtcttgtctg	tgttccactt	gcaaggatcg	gcgttgcatc	taaactcctt	1560
tcttaa						1566

<210> 32

<211> 521

<212> PRT

<213> Trifolium pratense

<400> 32

Met	Leu	Leu	Glu	Leu	Ala	Leu	Gly	Leu	Leu	Val	Leu	Ala	Leu	Phe	Leu	1	5	10	15
His	Leu	Arg	Pro	Thr	Pro	Thr	Ala	Lys	Ser	Lys	Ala	Leu	Arg	His	Leu	20	25	30	
Pro	Asn	Pro	Pro	Ser	Pro	Lys	Pro	Arg	Leu	Pro	Phe	Ile	Gly	His	Leu	35	40	45	
His	Leu	Leu	Lys	Asp	Lys	Leu	Leu	His	Tyr	Ala	Leu	Ile	Asp	Leu	Ser	50	55	60	
Lys	Lys	His	Gly	Pro	Leu	Phe	Ser	Leu	Tyr	Phe	Gly	Ser	Met	Pro	Thr	65	70	75	80
Val	Val	Ala	Ser	Thr	Pro	Glu	Leu	Phe	Lys	Leu	Phe	Leu	Gln	Thr	His	85	90	95	
Glu	Ala	Thr	Ser	Phe	Asn	Thr	Arg	Phe	Gln	Thr	Ser	Ala	Ile	Arg	Arg	100	105	110	
Leu	Thr	Tyr	Asp	Ser	Ser	Val	Ala	Met	Val	Pro	Ile	Gly	Pro	Tyr	Trp	115	120	125	
Lys	Phe	Val	Arg	Lys	Leu	Ile	Met	Asn	Asp	Leu	Leu	Asn	Ala	Thr	Thr	130	135	140	
Val	Asn	Lys	Leu	Arg	Pro	Leu	Arg	Thr	Gln	Gln	Ile	Arg	Lys	Phe	Leu	145	150	155	160
Arg	Val	Met	Ala	Gln	Gly	Ala	Glu	Ala	Gln	Lys	Pro	Leu	Asp	Leu	Thr	165	170	175	
Glu	Glu	Leu	Leu	Lys	Trp	Thr	Asn	Ser	Thr	Ile	Ser	Met	Met	Met	Leu	180	185	190	
Gly	Glu	Ala	Glu	Glu	Ile	Arg	Asp	Ile	Ala	Arg	Glu	Val	Leu	Lys	Ile	195	200	205	

Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys His Leu  
210 215 220  
Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys Phe  
225 230 235 240  
Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val Arg  
245 250 255  
Arg Arg Lys Asn Gly Glu Val Asp Glu Gly Glu Val Ser Gly Val Phe  
260 265 270  
Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Thr Glu Ile Lys  
275 280 285  
Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe Ser Ala  
290 295 300  
Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala Glu Leu  
305 310 315 320  
Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val Tyr Ser  
325 330 335  
Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn Leu  
340 345 350  
Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro  
355 360 365  
Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn Gly  
370 375 380  
Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp Gln Val  
385 390 395 400  
Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg Pro Glu  
405 410 415  
Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu Asp Leu  
420 425 430  
Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg Met  
435 440 445  
Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu Leu Ala  
450 455 460  
Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln  
465 470 475 480  
Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly  
485 490 495  
Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala Arg  
500 505 510  
Ile Gly Val Ala Ser Lys Leu Leu Ser  
515 520

<210> 33  
 <211> 1566  
 <212> DNA  
 <213> Trifolium pratense

<400> 33  
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 acacccactg caaaatcaaa agcacttcgc catctcccaa accaccaag cccaaagcct 120  
 cgtcttccct tcataggaca ccttcacatc ttataagaca aacttctcca ctacgcactc 180  
 atcgacctct ccaaaaaaca tgggtccctta ttctctctct actttgggtc catgccaacc 240  
 gttgttgctt ccacaccaga attgttcaag ctcttctctc aaacgcacga ggcaacttcc 300  
 ttcaacacaa ggttccaaac ctacagccata agacgcctca cctatgatag ctcatgtggc 360  
 atggttccct tcggacctta ctggaagttc gtgaggaagc tcatcatgaa cgaccttctc 420  
 aacgccacca ctgtaaaca gttgaggcct ttgaggaccc aacagatccg caagttcctt 480  
 agggttatgg cccaaggcgc agaggcacag aagccccttg acttgaccga ggagcttctg 540  
 aaatggacca acagcaccat ctccatgatg atgctcggcg aggctgagga gatcagagac 600  
 atcgctcgcg aggttcttaa gatctttggc gaatacagcc tcatgactt catctggcca 660  
 ttgaagcatc tcaagggttg aaagtatgag aagaggatcg acgacatctt gaacaagttc 720  
 gacctgtgct ttgaaagagt catcaagaag cgccgtgaga tcgtgaggag gagaaagaac 780  
 ggagaggttg ttgaggggta ggtcagcggg gttttccttg acactttgct tgaattcgct 840  
 gaggatgaga ccacggagat caaaatcacc aaggaccaca tcaagggtct tgttgtcgac 900  
 tttttctcgg caggaacaga ctccacagcg gtggcaacag agtgggcatt ggcagaactc 960  
 atcaacaatc ctaaggtgtt ggaaaaggct cgtgaggagg tctacagtgt tgtgggaaag 1020  
 gacagacttg tggacgaagt tgacactcaa aaccttcctt acattagagc aatcgtgaag 1080  
 gagacattcc gcatgcacc gccactccca gtggtcaaaa gaaagtgcac agaagagtgt 1140  
 gagattaatg gatatgtgat cccagagggg gcattgattc tcttcaatgt atggcaagta 1200  
 ggaagagacc ccaaatactg ggacagacca tcggagttcc gtcctgagag gttcctagag 1260  
 acaggggctg aaggggaagc aaggcctctt gatcttaggg gacaacattt tcaacttctc 1320  
 ccatttgggt ctgggaggag aatgtgcctt ggagtcaatc tggctacttc ggggaatggca 1380  
 acacttcttg catctcttat tcagtgtctt gacttgcaag tgctgggtcc acaaggacag 1440  
 atattgaagg gtggtgacgc caaagttagc atggaagaga gggccggcct cactgttcca 1500  
 agggcacata gtcttgtctg tgttccactt gcaaggatcg gcgttgcatc taaactcctt 1560  
 tcttaa 1566

<210> 34  
 <211> 521  
 <212> PRT  
 <213> Trifolium pratense

<400> 34  
 Met Leu Leu Glu Leu Ala Leu Gly Leu Leu Val Leu Ala Leu Phe Leu  
 1 5 10 15  
 His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg His Leu  
 20 25 30  
 Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly His Leu  
 35 40 45  
 His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp Leu Ser  
 50 55 60  
 Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met Pro Thr  
 65 70 75 80  
 Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Thr His  
 85 90 95  
 Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile Arg Arg  
 100 105 110

Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro Tyr Trp  
 115 120 125  
 Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala Thr Thr  
 130 135 140  
 Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys Phe Leu  
 145 150 155 160  
 Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp Leu Thr  
 165 170 175  
 Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met Met Leu  
 180 185 190  
 Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys Ile  
 195 200 205  
 Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys His Leu  
 210 215 220  
 Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys Phe  
 225 230 235 240  
 Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val Arg  
 245 250 255  
 Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly Val Phe  
 260 265 270  
 Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Thr Glu Ile Lys  
 275 280 285  
 Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe Ser Ala  
 290 295 300  
 Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala Glu Leu  
 305 310 315 320  
 Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val Tyr Ser  
 325 330 335  
 Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn Leu  
 340 345 350  
 Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro  
 355 360 365  
 Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn Gly  
 370 375 380  
 Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp Gln Val  
 385 390 395 400  
 Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg Pro Glu  
 405 410 415  
 Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu Asp Leu  
 420 425 430

Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg Met  
 435 440 445

Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu Leu Ala  
 450 455 460

Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln  
 465 470 475 480

Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly  
 485 490 495

Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala Arg  
 500 505 510

Ile Gly Val Ala Ser Lys Leu Leu Ser  
 515 520

<210> 35  
 <211> 1563  
 <212> DNA  
 <213> Pisum sativum

<400> 35  
 atgttgctgg aacttgcaact tggtttggtt gtgtagctt tgtttctgca cttgcgtccc 60  
 acaccaagcg caaaatcaaa agcacttcgc cacctcccaa accctccaag cccaaagcct 120  
 cgtcttccct tcattggcca ccttcacctc ttaaaagata aacttctcca ctatgcactc 180  
 atcgatctct ccaaaaagca tggcccccta ttctctctct ccttcggctc catgccaaacc 240  
 gtcgttgccct ccacccctga gttgttcaag ctcttctctc aagcccacga ggcaacttcc 300  
 ttcagcacaa gggtccaaac ctctgccgta agacgcctca cttacgacaa ctctgtggcc 360  
 atggttccat tcggacctta ctggaagttc gtgaggaagc tcatcatgaa cgaccttctc 420  
 aacgccacca ccgtcaacga gctcaggcct ttgaggaccc aacagatccg caagttcctt 480  
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 aaatggacca acagcaccat ctccatgatg atgctcggcg aggctgagga gatcagagac 600  
 atcgctcgcg aggtccttaa gatcttcggc gaatacagcc tcaactgactt catctggcct 660  
 ttgaaagtatc tcaaggttgg aaagtatgag aagaggattg atgacatctt gaacaagttc 720  
 gaccctgtcg ttgaaagggc catcaagaag cgccgtgaga tcgtcagaag gagaaagaac 780  
 ggagaagttg ttgagggcga ggccagcggc gtcttctctg acactttgct tgaattcgct 840  
 gaggacgaga ccatggagat caaaattacc aaggagcaaa tcaagggcct tgttgctgac 900  
 tttttctctg cagggacaga ttccacagcg gtggcaacag agtgggcatt ggcagagctc 960  
 atcaacaatc ccagggtggt gcaaaaggct cgtgaggagg tctacagtgt tgtgggcaaa 1020  
 gatagactcg ttgacgaagt cgacactcaa aaccttctt acattagggc cattgtgaag 1080  
 gagacattcc gaatgcaccc accactccca gtggtcaaaa gaaagtgcac agaagagtgt 1140  
 gagattaatg ggtatgtgat cccagagggg gcattggttc ttttcaatgt ttggcaagta 1200  
 ggaaaggacc ccaataactg ggacagacca tcagaattcc gtcccagagag gttcttagaa 1260  
 actggcgctg aaggggaagc agggcctctt gatcttaggg gccagcattt ccaactcctc 1320  
 ccatttgggt ctgggaggag aatgtgccct ggtgtcaatt tggctacttc aggaatggca 1380  
 acacttcttg catctcttat ccaatgcttt gacctgcaag tgctgggccc tcaaggacaa 1440  
 atattgaaag gtgacgatgc caaagttagc atggaagaga gagctggcct caccgttcca 1500  
 agggcacata gtctcgtttg tgttccactt gcaaggatcg gcgttgcatc taaactcctt 1560  
 tct 1563

<210> 36  
 <211> 521  
 <212> PRT  
 <213> Pisum sativum

<400> 36

Met	Leu	Leu	Glu	Leu	Ala	Leu	Gly	Leu	Phe	Val	Leu	Ala	Leu	Phe	Leu	1	5	10	15
His	Leu	Arg	Pro	Thr	Pro	Ser	Ala	Lys	Ser	Lys	Ala	Leu	Arg	His	Leu	20	25	30	
Pro	Asn	Pro	Pro	Ser	Pro	Lys	Pro	Arg	Leu	Pro	Phe	Ile	Gly	His	Leu	35	40	45	
His	Leu	Leu	Lys	Asp	Lys	Leu	Leu	His	Tyr	Ala	Leu	Ile	Asp	Leu	Ser	50	55	60	
Lys	Lys	His	Gly	Pro	Leu	Phe	Ser	Leu	Ser	Phe	Gly	Ser	Met	Pro	Thr	65	70	75	80
Val	Val	Ala	Ser	Thr	Pro	Glu	Leu	Phe	Lys	Leu	Phe	Leu	Gln	Ala	His	85	90	95	
Glu	Ala	Thr	Ser	Phe	Ser	Thr	Arg	Phe	Gln	Thr	Ser	Ala	Val	Arg	Arg	100	105	110	
Leu	Thr	Tyr	Asp	Asn	Ser	Val	Ala	Met	Val	Pro	Phe	Gly	Pro	Tyr	Trp	115	120	125	
Lys	Phe	Val	Arg	Lys	Leu	Ile	Met	Asn	Asp	Leu	Leu	Asn	Ala	Thr	Thr	130	135	140	
Val	Asn	Glu	Leu	Arg	Pro	Leu	Arg	Thr	Gln	Gln	Ile	Arg	Lys	Phe	Leu	145	150	155	160
Arg	Val	Met	Ala	Gln	Ser	Ala	Glu	Ala	Gln	Lys	Pro	Leu	Asp	Val	Thr	165	170	175	
Glu	Glu	Leu	Leu	Lys	Trp	Thr	Asn	Ser	Thr	Ile	Ser	Met	Met	Met	Leu	180	185	190	
Gly	Glu	Ala	Glu	Glu	Ile	Arg	Asp	Ile	Ala	Arg	Glu	Val	Leu	Lys	Ile	195	200	205	
Phe	Gly	Glu	Tyr	Ser	Leu	Thr	Asp	Phe	Ile	Trp	Pro	Leu	Lys	Tyr	Leu	210	215	220	
Lys	Val	Gly	Lys	Tyr	Glu	Lys	Arg	Ile	Asp	Asp	Ile	Leu	Asn	Lys	Phe	225	230	235	240
Asp	Pro	Val	Val	Glu	Arg	Val	Ile	Lys	Lys	Arg	Arg	Glu	Ile	Val	Arg	245	250	255	
Arg	Arg	Lys	Asn	Gly	Glu	Val	Val	Glu	Gly	Glu	Ala	Ser	Gly	Val	Phe	260	265	270	
Leu	Asp	Thr	Leu	Leu	Glu	Phe	Ala	Glu	Asp	Glu	Thr	Met	Glu	Ile	Lys	275	280	285	
Ile	Thr	Lys	Glu	Gln	Ile	Lys	Gly	Leu	Val	Val	Asp	Phe	Phe	Ser	Ala	290	295	300	
Gly	Thr	Asp	Ser	Thr	Ala	Val	Ala	Thr	Glu	Trp	Ala	Leu	Ala	Glu	Leu	305	310	315	320

Ile Asn Asn Pro Arg Val Leu Gln Lys Ala Arg Glu Glu Val Tyr Ser  
 325 330 335  
 Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn Leu  
 340 345 350  
 Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro  
 355 360 365  
 Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn Gly  
 370 375 380  
 Tyr Val Ile Pro Glu Gly Ala Leu Val Leu Phe Asn Val Trp Gln Val  
 385 390 395 400  
 Gly Lys Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg Pro Glu  
 405 410 415  
 Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Gly Pro Leu Asp Leu  
 420 425 430  
 Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg Met  
 435 440 445  
 Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu Leu Ala  
 450 455 460  
 Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln  
 465 470 475 480  
 Ile Leu Lys Gly Asp Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly  
 485 490 495  
 Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala Arg  
 500 505 510  
 Ile Gly Val Ala Ser Lys Leu Leu Ser  
 515 520

<210> 37  
 <211> 1496  
 <212> DNA  
 <213> *Trifolium repens*

<400> 37  
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 ccaagcccaa ggccctcgtct tcccttcatt ggccaccttc acctcttaaa agataaactt 120  
 ctccactatg caccatcgga tctctccaaa aagcatggcc ccttattctc tctctccttc 180  
 ggctccatgc caaccgtcgt tgccctccacc cctgagttgt tcaagctctt cctccaaacc 240  
 caccgaggcaa cttccttcaa cacaagggtc caaacctctg ccataagaca cctcacttac 300  
 gacaactctg tggccatggt tccattcgga ccttactgga agttcgtgag gaagctcatc 360  
 atgaacgacc ttctcaacgc caccaccgtc aacaagctca ggcctttgag gacccaacag 420  
 atccgcaagt tcttaggggt tatggcccaa agcgcagagg cccagaagcc ccttgacgtc 480  
 accgaggagc ttctcaaatg gaccaacagc accatctcca tgatgatgct cggcgaggct 540  
 gaggagatca gagacatcgc tcgcgagggt cttaagatct tcggcgaata cagcctcact 600  
 gacttcatct ggcctttgaa gtacctcaag gttggaaagt atgagaagag gattgatgac 660  
 atcttgaaca agttcgaccc tgcggttgaa agggatcatca agaagcgccg tgagatcgtc 720  
 agaaggagaa agaacggaga agttgttgag ggcgaggcca gcggcgctctt cctcgacact 780  
 ttgcttgaat tcgctgagga cgagaccatg gagatcaaaa ttaccaagga gcaaatcaag 840

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ggccttggtg tcgacttttt ctctgcaggg acagattcca cagcgggtggt aacagagtgg      900
gcattggcag agctcatcaa caatcccagg gtgttgcaaa aggctcgtga ggaggtctac      960
agtgttggtg gcaaagatag actcgttgac gaagttgaca ctcaaaacct tccttacatt     1020
agggccattg tgaaggagac attccgaatg caccaccac tcccagtggt caaaagaaaag     1080
tgcacagaag agtgtgagat taatgggtat gtgatcccag agggagcatt ggttcttttc     1140
aatgtttggc aagtaggaag ggaccccaaa tactgggaca gaccatcaga atcccgtccc     1200
gagaggttct tagaaactgg tgctgaaggg gaagcagggc ctcttgatct taggggccag     1260
catttccaac tcctcccatt tgggtctggg aggagaatgt gccctgggtg cagtttggtg     1320
acttcaggaa tggcaacact tcttgcatct cttatccaat gctttgacct gcaagtgctg     1380
ggcctcaag gacaaatatt gaaaggtgat gatgccaaag ttagcatgga agagagagct     1440
ggcctcacag ttccaagggc acatagtctc gtttgtgttc cacttgcaag gatcgg      1496

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<210> 38
<211> 498
<212> PRT
<213> Trifolium repens

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<400> 38
Ser His Leu Arg Pro Thr Pro Ser Ala Ile Ser Lys Ala Leu Arg His
1              5              10              15

Leu Pro Asn Pro Pro Ser Pro Arg Pro Arg Leu Pro Phe Ile Gly His
                20              25              30

Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Pro Ile Asp Leu
                35              40              45

Ser Lys Lys His Gly Pro Leu Phe Ser Leu Ser Phe Gly Ser Met Pro
                50              55              60

Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Thr
65              70              75              80

His Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile Arg
                85              90              95

His Leu Thr Tyr Asp Asn Ser Val Ala Met Val Pro Phe Gly Pro Tyr
                100             105             110

Trp Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala Thr
                115             120             125

Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys Phe
130             135             140

Leu Arg Val Met Ala Gln Ser Ala Glu Ala Gln Lys Pro Leu Asp Val
145             150             155             160

Thr Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met Met
                165             170             175

Leu Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys
                180             185             190

Ile Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys Tyr
                195             200             205

Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys
210             215             220

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Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val  
 225 230 235 240  
 Arg Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Ala Ser Gly Val  
 245 250 255  
 Phe Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu Ile  
 260 265 270  
 Lys Ile Thr Lys Glu Gln Ile Lys Gly Leu Val Val Asp Phe Phe Ser  
 275 280 285  
 Ala Gly Thr Asp Ser Thr Ala Val Val Thr Glu Trp Ala Leu Ala Glu  
 290 295 300  
 Leu Ile Asn Asn Pro Arg Val Leu Gln Lys Ala Arg Glu Glu Val Tyr  
 305 310 315 320  
 Ser Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn  
 325 330 335  
 Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro  
 340 345 350  
 Pro Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn  
 355 360 365  
 Gly Tyr Val Ile Pro Glu Gly Ala Leu Val Leu Phe Asn Val Trp Gln  
 370 375 380  
 Val Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Ser Arg Pro  
 385 390 395 400  
 Glu Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Gly Pro Leu Asp  
 405 410 415  
 Leu Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg  
 420 425 430  
 Met Cys Pro Gly Val Ser Leu Ala Thr Ser Gly Met Ala Thr Leu Leu  
 435 440 445  
 Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly  
 450 455 460  
 Gln Ile Leu Lys Gly Asp Asp Ala Lys Val Ser Met Glu Glu Arg Ala  
 465 470 475 480  
 Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala  
 485 490 495

Arg Ile

<210> 39  
 <211> 1501  
 <212> DNA  
 <213> Trifolium repens

<400> 39

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acccaccaag	cccaaagcct	cgtcttcctt	tcataggaca	ccttcattct	ttaaaagaca	120
aactttctcca	ctacgcactc	atcgacctct	ccaaaaaaca	tggtccctta	ttctctctct	180
actttgggtc	catgccaacc	gttggtgcct	ccacaccaga	attgttcaag	ctcttcctcc	240
aaacgcacga	ggcaacttcc	ttcaacacaa	ggttcctaac	ctcagccata	agacgcctca	300
cctacgacaa	ctctgtggcc	atgggttccat	tcggacctta	ctggaagttc	gtgaggaagc	360
tcatcatgaa	cgaccttctc	aacgccacca	ccgtcaacaa	gctcaggcct	ttgaggaccc	420
aacagatccg	caagttcctt	aggggttatgg	cccaaagcgc	agaggcccag	aagccccttg	480
acgtcaccga	ggagcttctc	aaatggacca	acagcaccat	ctccatgatg	atgctcggcg	540
aggctgagga	gatcagagac	atcgctcgcg	aggttcttaa	gatcttcggc	gaatacagcc	600
tactgactt	catctggcct	ttgaagtatc	tcaagggttg	aaagtatgag	aagaggattg	660
atgacatctt	gaacaagttc	gacctgtctg	ttgaaagagt	catcaagaag	cgccgtgaga	720
tcgtcagaag	gagaaagaac	ggagaagttg	ttgagggcga	ggccagcggc	gtcttcctcg	780
acactttgct	tgaattcgct	gaggacgaga	ccatggagat	caaaattacc	aaggagcaaa	840
tcaagggcct	tggtgtcgac	tttttctctg	cagggacaga	ttccacagcg	gtggcaacag	900
agtgggcatt	ggcagagctc	atcaacaatc	ccaagggtgt	gcaaaaggct	cgtgaggagg	960
cctacagtgt	tgtgggcaaa	gatagactcg	ttgacgaagt	tgacactcaa	aaccttcctt	1020
acattagggc	cattgtgaag	gagacattcc	gaatgcaccc	accactccca	gtgggtcaaaa	1080
gaaagtgcac	agaagagtgt	gggattaatg	ggtatgtgat	cccagagggg	gcattgggttc	1140
ttttcaatgt	ttggcaagta	ggaagggacc	ccaaatactg	ggacagacca	tcagaattcc	1200
gtcccagagag	gttcttagaa	actggtgctg	aaggggaagc	agggcctctt	gatcttaggg	1260
gccagcattt	ccaactcctc	ccatttggtt	ctgggaggag	aatgtgccct	ggtgtcaatt	1320
tggtacttct	aggaatggca	acacttcttg	catctcttat	ccaatgcttt	gacctgcaag	1380
tgctgggccc	tcaaggacaa	atattgaaag	gtgatgatgc	caaagttagc	atggaagaga	1440
gagctggcct	cacagttcca	agggcacata	gtctcgtttg	tgttccactt	gcaaggatcg	1500
g						1501

<210> 40  
 <211> 499  
 <212> PRT  
 <213> *Trifolium repens*

<400> 40  
 Phe Leu His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg  
 1 5 10 15  
 His Leu Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly  
 20 25 30  
 His Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp  
 35 40 45  
 Leu Ser Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met  
 50 55 60  
 Pro Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln  
 65 70 75 80  
 Thr His Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile  
 85 90 95  
 Arg Arg Leu Thr Tyr Asp Asn Ser Val Ala Met Val Pro Phe Gly Pro  
 100 105 110  
 Tyr Trp Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala  
 115 120 125  
 Thr Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys  
 130 135 140

Phe	Leu	Arg	Val	Met	Ala	Gln	Ser	Ala	Glu	Ala	Gln	Lys	Pro	Leu	Asp	
145					150					155					160	
Val	Thr	Glu	Glu	Leu	Leu	Lys	Trp	Thr	Asn	Ser	Thr	Ile	Ser	Met	Met	
				165					170					175		
Met	Leu	Gly	Glu	Ala	Glu	Glu	Ile	Arg	Asp	Ile	Ala	Arg	Glu	Val	Leu	
			180					185					190			
Lys	Ile	Phe	Gly	Glu	Tyr	Ser	Leu	Thr	Asp	Phe	Ile	Trp	Pro	Leu	Lys	
		195					200					205				
Tyr	Leu	Lys	Val	Gly	Lys	Tyr	Glu	Lys	Arg	Ile	Asp	Asp	Ile	Leu	Asn	
	210					215					220					
Lys	Phe	Asp	Pro	Val	Val	Glu	Arg	Val	Ile	Lys	Lys	Arg	Arg	Glu	Ile	
225					230					235					240	
Val	Arg	Arg	Arg	Lys	Asn	Gly	Glu	Val	Val	Glu	Gly	Glu	Ala	Ser	Gly	
				245					250					255		
Val	Phe	Leu	Asp	Thr	Leu	Leu	Glu	Phe	Ala	Glu	Asp	Glu	Thr	Met	Glu	
			260					265					270			
Ile	Lys	Ile	Thr	Lys	Glu	Gln	Ile	Lys	Gly	Leu	Val	Val	Asp	Phe	Phe	
		275					280					285				
Ser	Ala	Gly	Thr	Asp	Ser	Thr	Ala	Val	Ala	Thr	Glu	Trp	Ala	Leu	Ala	
	290					295					300					
Glu	Leu	Ile	Asn	Asn	Pro	Lys	Val	Leu	Gln	Lys	Ala	Arg	Glu	Glu	Ala	
305					310					315					320	
Tyr	Ser	Val	Val	Gly	Lys	Asp	Arg	Leu	Val	Asp	Glu	Val	Asp	Thr	Gln	
				325					330					335		
Asn	Leu	Pro	Tyr	Ile	Arg	Ala	Ile	Val	Lys	Glu	Thr	Phe	Arg	Met	His	
			340					345					350			
Pro	Pro	Leu	Pro	Val	Val	Lys	Arg	Lys	Cys	Thr	Glu	Glu	Cys	Gly	Ile	
		355					360					365				
Asn	Gly	Tyr	Val	Ile	Pro	Glu	Gly	Ala	Leu	Val	Leu	Phe	Asn	Val	Trp	
	370					375					380					
Gln	Val	Gly	Arg	Asp	Pro	Lys	Tyr	Trp	Asp	Arg	Pro	Ser	Glu	Phe	Arg	
385					390					395					400	
Pro	Glu	Arg	Phe	Leu	Glu	Thr	Gly	Ala	Glu	Gly	Glu	Ala	Gly	Pro	Leu	
				405					410					415		
Asp	Leu	Arg	Gly	Gln	His	Phe	Gln	Leu	Leu	Pro	Phe	Gly	Ser	Gly	Arg	
			420					425					430			
Arg	Met	Cys	Pro	Gly	Val	Asn	Leu	Ala	Thr	Ser	Gly	Met	Ala	Thr	Leu	
		435					440					445				
Leu	Ala	Ser	Leu	Ile	Gln	Cys	Phe	Asp	Leu	Gln	Val	Leu	Gly	Pro	Gln	
	450					455					460					

Gly Gln Ile Leu Lys Gly Asp Asp Ala Lys Val Ser Met Glu Glu Arg  
 465 470 475 480

Ala Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu  
 485 490 495

Ala Arg Ile

<210> 41  
 <211> 21  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> PCR primer

<400> 41  
 ttgctggaac ttgcacttgg t 21

<210> 42  
 <211> 32  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> PCR primer

<400> 42  
 gtatatgatg ggtaccttaa ttaagaaagg ag 32

<210> 43  
 <211> 26  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> PCR primer

<400> 43  
 gacgcctcac ttacgacaac tctgtg 26

<210> 44  
 <211> 25  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> PCR primer

<400> 44  
 cctctcggga cggaattctg atggt 25

<210> 45  
 <211> 25  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> PCR primer

<400> 45  
gcggtgcacg ggcggactct tcttc 25

<210> 46  
<211> 25  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> PCR primer

<400> 46  
cgccaatac gcaaaccgcc tctcc 25

<210> 47  
<211> 1501  
<212> DNA  
<213> Beta vulgaris

<400> 47  
tgtttctgca cttgcgtccc acaccactg caaaatcaaa agcacttcgc catctcccaa 60  
accaccaag cccaaagcct cgtcttccct tcataggaca ccttcattctc ttaaaagaca 120  
aacttctcca ctacgcactc atcgacctct ccaaaaaaca tgggtccctta ttctctctct 180  
actttggctc catgccaaac gttgttgctt ccacaccaga attgttcaag ctcttctctc 240  
aaacgcacga ggcaacttcc ttcaacacaa ggttccaaac ctccagccata agacgcctca 300  
cctatgatag ctccagtggcc atggttccct tcggacctta ctggaagttc gtgaggaagc 360  
tcatcatgaa cgaccttctc aacgccacca ctgtaaaciaa gttgaggcct ttgaggaccc 420  
aacagatccg caagttcctt aggggttatgg cccaaggcgc agaggcacag aagccccttg 480  
acttgaccga ggagcttctg aaatggacca acagcaccat ctccatgatg atgctcggcg 540  
aggctgagga gatcagagac atcgctcgcg aggttcttaa gatctttggc gaatacagcc 600  
tactgactt catctggcca ttgaagcatc tcaagggttg aaagtatgag aagaggatcg 660  
acgacatctt gaacaagttc gacctgtctg ttgaaagagt catcaagaag cgccgtgaga 720  
tcgtgaggag gagaaagaac ggagaggatg ttgaggggtga ggtcagcggg gttttccttg 780  
acactttgct tgaattcgct gaggatgaga ccatggagat caaaatcacc aaggaccaca 840  
tcaagggtct tgttgtcgac tttttctcgg caggaacaga ctccacagcg gtggcaacag 900  
agtgggcatt ggcagaactc atcaacaatc ctaagggtgtt ggaaaaggct cgtgaggagg 960  
tctacagtgt tgtgggaaag gacagacttg tggacgaagt agacactcaa aaccttctt 1020  
acattagagc aatcgtgaag gagacattcc gcatgcaccc gccactcca gtggtcaaaa 1080  
gaaagtgcac agaagagtgt gagattaatg gatatgtgat cccagaggga gcattgattc 1140  
tcttcaatgt atggcaagta ggaagagacc ctaaatactg ggacagacca tcggagttcc 1200  
gtcctgagag gttcctagag acaggggctg aaggggaagc aaggcttctt gatcttaggg 1260  
gacaacattt tcaacttctc ccatttgggt ctgggaggag aatgtgccct ggagtcaatc 1320  
tggctacttc gggaatggca acacttcttg catctcttat tcagtgcctt gacttgcaag 1380  
tgctgggtcc acaaggacag atattgaagg gtggtgacgc caaagttagc atggaagaga 1440  
gagccggcct cactgttcca agggcacata gtcttgtctg tgttccactt gcaaggatcg 1500  
g 1501

<210> 48  
<211> 499  
<212> PRT  
<213> Beta vulgaris

<400> 48  
Phe Leu His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg  
1 5 10 15  
His Leu Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly  
20 25 30

His Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp  
 35 40 45  
 Leu Ser Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met  
 50 55 60  
 Pro Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln  
 65 70 75 80  
 Thr His Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile  
 85 90 95  
 Arg Arg Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro  
 100 105 110  
 Tyr Trp Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala  
 115 120 125  
 Thr Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys  
 130 135 140  
 Phe Leu Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp  
 145 150 155 160  
 Leu Thr Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met  
 165 170 175  
 Met Leu Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu  
 180 185 190  
 Lys Ile Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys  
 195 200 205  
 His Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn  
 210 215 220  
 Lys Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile  
 225 230 235 240  
 Val Arg Arg Arg Lys Asn Gly Glu Asp Val Glu Gly Glu Val Ser Gly  
 245 250 255  
 Val Phe Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu  
 260 265 270  
 Ile Lys Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe  
 275 280 285  
 Ser Ala Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala  
 290 295 300  
 Glu Leu Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val  
 305 310 315 320  
 Tyr Ser Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln  
 325 330 335  
 Asn Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His  
 340 345 350

Pro Pro Leu Pro Val Val Lys Arg Lys Cys Ile Glu Glu Cys Glu Ile  
           355                          360                          365  
 Asn Gly Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp  
       370                          375                          380  
 Gln Val Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg  
 385                          390                          395                          400  
 Pro Glu Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Leu Leu  
                           405                          410                          415  
 Asp Leu Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg  
                           420                          425                          430  
 Arg Met Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu  
           435                          440                          445  
 Leu Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln  
       450                          455                          460  
 Gly Gln Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg  
 465                          470                          475                          480  
 Ala Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu  
                           485                          490                          495

Ala Arg Ile

<210> 49  
 <211> 30  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> PCR primer

<400> 49  
 gaattcgcg cgcgtctaga actagtggat

30

<210> 50  
 <211> 30  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> PCR primer

<400> 50  
 gaattcgcg cgcgaattg ggtaccgggc

30

<210> 51  
 <211> 27  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> PCR primer

<400> 51  
gcaaacgaag acaaatggga gatgata

27

<210> 52  
<211> 1801  
<212> DNA  
<213> Glycine max

<220>  
<221> Intron  
<222> (895) .. (1112)

<400> 52

ttgctggaac	ttgcacttgg	tttgtttgtg	ttagctttgt	ttctgcactt	gcgtcccaca	60
ccaagtgcaa	aatcaaaagc	acttcgccac	ctcccaaacc	ctccaagccc	aaagcctcgt	120
cttcccttca	ttggccacct	tcacctctta	aaagataaac	ttctccacta	tgcactcatc	180
gatctctcca	aaaagcatgg	ccccttatte	tctctctcct	tcggctccat	gccaaccgtc	240
gttgccctcca	cccctgagtt	gttcaagctc	ttcctccaaa	cccacgagge	aacttccttc	300
aacacaaggt	tccaaacctc	tgccataaga	cgcctcactt	acgacaactc	tgtggccatg	360
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gccaccaccg	tcaacaagct	caggcctttg	aggacccaac	agatccgcaa	gttccttagg	480
gttatggccc	aaagcgcaga	ggcccagaag	ccccttgacg	tcaccgagga	gcttctcaaa	540
tggaccaaca	gcaccatctc	catgatgatg	ctcggcgagg	ctgaggagat	cagagacatc	600
gctcgcgagg	ttcttaagat	cttcggcgaa	tacagcctca	ctgacttcat	ctggcctttg	660
aagtatctca	aggttggaaa	gtatgagaag	aggattgatg	acatcttgaa	caagttcgac	720
cctgtcgttg	aaagggctcat	caagaagcgc	cgtgagatcg	tcagaaggag	aaagaacgga	780
gaagtgttg	agggcgaggc	cagcggcgtc	ttcctcgaca	ctttgcttga	attcgctgag	840
gacgagacca	tggagatcaa	aattaccaag	gagcaaatca	agggccttgt	tgtcgttaagt	900
ttccttcttc	tctctacttt	tattactttc	tttcattcat	catatgtatt	ggcattaaat	960
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gaccatcaga	attccgtccc	gagaggttct	tagaaactgg	tgctgaaggg	gaagcagggc	1500
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ttagcatgga	agagagagct	ggcctcacag	ttccaagggc	acatagtctc	gtttgtgttc	1740
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c						1801

<210> 53  
<211> 1900  
<212> DNA  
<213> Glycine max

<220>  
<221> Intron  
<222> (947) .. (1082)

<400> 53

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cggaccttac	tggaagttcg	tgaggaaagc	catcatgaac	gaccttccca	acgccaccac	480
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<210> 54

<211> 1501

<212> DNA

<213> Lupinus albus

<400> 54

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gacaacattt	tcaacttctc	ccatttggtg	ctgggaggag	aatgtgccct	ggagtcattc	1320
tggctacttc	gggaatggca	acacttcttg	catctcttat	tcagtgtctt	gacttgcaag	1380
tgctgggtcc	acaaggacag	atattgaagg	gtggtgacgc	caaagttagc	atggaagaga	1440
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g						1501

<210> 55  
 <211> 499  
 <212> PRT  
 <213> Lupinus albus

<400> 55  
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 His Leu Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly  
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 His Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp  
 35 40 45  
 Leu Ser Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met  
 50 55 60  
 Pro Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln  
 65 70 75 80  
 Thr His Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile  
 85 90 95  
 Arg Arg Leu Thr Tyr Asp Ser Ser Val Ala Arg Val Pro Phe Gly Pro  
 100 105 110  
 Tyr Trp Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala  
 115 120 125  
 Thr Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys  
 130 135 140  
 Phe Leu Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp  
 145 150 155 160  
 Leu Thr Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met  
 165 170 175  
 Met Leu Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu  
 180 185 190  
 Lys Ile Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys  
 195 200 205  
 His Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn  
 210 215 220  
 Lys Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile  
 225 230 235 240  
 Val Arg Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly  
 245 250 255  
 Val Leu Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu  
 260 265 270  
 Ile Lys Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe  
 275 280 285

Ser Ala Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala  
 290 295 300  
 Glu Leu Ile Asn Asn Pro Lys Val Leu Glu Arg Ala Arg Glu Glu Val  
 305 310 315 320  
 Tyr Ser Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln  
 325 330 335  
 Asn Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His  
 340 345 350  
 Pro Pro Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile  
 355 360 365  
 Asn Gly Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp  
 370 375 380  
 Gln Val Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg  
 385 390 395 400  
 Pro Glu Arg Phe Leu Glu Thr Glu Ala Glu Gly Glu Ala Arg Pro Leu  
 405 410 415  
 Asp Leu Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg  
 420 425 430  
 Arg Met Cys Pro Gly Val Ile Leu Ala Thr Ser Gly Met Ala Thr Leu  
 435 440 445  
 Leu Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln  
 450 455 460  
 Gly Gln Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg  
 465 470 475 480  
 Ala Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu  
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Ala Arg Ile

<210> 56  
 <211> 1501  
 <212> DNA  
 <213> Medicago sativa

<400> 56  
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 aacttctcca ctacgcactc atcgacctct ccaaaaaaca tggtcctta ttctctctct 180  
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tgctgggtcc	acaaggacag	atattgaagg	gtggtgacgc	caaagttagc	atggaagaga	1440
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g						1501

<210> 57  
 <211> 499  
 <212> PRT  
 <213> Medicago sativa

<400> 57

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			20					25					30		
His	Leu	His	Leu	Leu	Lys	Asp	Lys	Leu	Leu	His	Tyr	Ala	Leu	Ile	Asp
		35					40					45			
Leu	Ser	Lys	Lys	His	Gly	Pro	Leu	Phe	Ser	Leu	Tyr	Phe	Gly	Ser	Met
	50					55					60				
Pro	Thr	Val	Val	Ala	Ser	Thr	Pro	Glu	Leu	Phe	Lys	Leu	Phe	Leu	Gln
65					70					75					80
Thr	His	Glu	Ala	Thr	Ser	Phe	Asn	Thr	Arg	Phe	Gln	Thr	Ser	Ala	Ile
				85					90					95	
Arg	Arg	Leu	Thr	Tyr	Asp	Ser	Ser	Val	Ala	Met	Ala	Pro	Phe	Gly	Pro
			100					105					110		
Tyr	Trp	Lys	Phe	Val	Arg	Lys	Leu	Ile	Met	Asn	Asp	Leu	Leu	Asn	Ala
		115					120					125			
Thr	Thr	Val	Asn	Lys	Leu	Arg	Pro	Leu	Arg	Thr	Gln	Gln	Ile	Arg	Lys
	130					135					140				
Phe	Leu	Arg	Val	Met	Ala	Gln	Gly	Ala	Glu	Ala	Gln	Lys	Pro	Leu	Asp
145				150					155					160	
Leu	Thr	Glu	Glu	Leu	Leu	Lys	Trp	Thr	Asn	Ser	Thr	Thr	Ser	Met	Met
				165				170						175	
Met	Leu	Gly	Glu	Ala	Glu	Glu	Ile	Arg	Asp	Ile	Ala	Arg	Glu	Val	Leu
			180				185						190		
Lys	Ile	Phe	Gly	Glu	Tyr	Ser	Leu	Thr	Asp	Phe	Ile	Arg	Pro	Leu	Lys
		195					200					205			

His Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn  
 210 215 220  
 Lys Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile  
 225 230 235 240  
 Val Arg Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly  
 245 250 255  
 Val Phe Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Thr Glu  
 260 265 270  
 Ile Lys Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe  
 275 280 285  
 Ser Ala Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala  
 290 295 300  
 Glu Leu Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val  
 305 310 315 320  
 Tyr Ser Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln  
 325 330 335  
 Asn Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His  
 340 345 350  
 Pro Pro Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile  
 355 360 365  
 Asn Gly Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp  
 370 375 380  
 Gln Val Gly Arg Asp Ser Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg  
 385 390 395 400  
 Pro Glu Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu  
 405 410 415  
 Asp Leu Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg  
 420 425 430  
 Arg Met Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu  
 435 440 445  
 Leu Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln  
 450 455 460  
 Gly Gln Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg  
 465 470 475 480  
 Ala Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu  
 485 490 495  
 Ala Arg Ile

<210> 58  
 <211> 1501

<212> DNA  
<213> Medicago sativa

<400> 58  
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 aacttctcca ctacgcactc atcgacctct ccaaaaaaca tggtcctta ttctctctct 180  
 actttggctc catgccaacc gttgttgctt ccacaccaga attgttcaag ctcttcctcc 240  
 aaacgcacga ggcaacttcc ttcaacacaa ggttccaaac ctcagccata agacgcctca 300  
 cctatgatag ctcagtggcc atggttccct tcggacctta ctggaagttc gtgaggaagc 360  
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 tgcgtgggtcc acaaggacag atattgaagg gtggtgacgc caaagttagc atggaagaga 1440  
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<210> 59  
<211> 499  
<212> PRT  
<213> Medicago sativa

<400> 59  
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 His Leu Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly  
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 His Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp  
 35 40 45  
 Leu Ser Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met  
 50 55 60  
 Pro Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln  
 65 70 75 80  
 Thr His Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile  
 85 90 95  
 Arg Arg Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro  
 100 105 110  
 Tyr Trp Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala  
 115 120 125

Thr	Thr	Val	Asn	Lys	Leu	Arg	Pro	Leu	Arg	Thr	Gln	Gln	Ile	Arg	Lys			
	130					135					140							
Leu	Leu	Arg	Val	Met	Ala	Gln	Gly	Ala	Glu	Ala	Gln	Lys	Pro	Leu	Asp			
145					150					155					160			
Leu	Thr	Glu	Glu	Leu	Leu	Lys	Trp	Thr	Asn	Ser	Thr	Ile	Ser	Met	Met			
				165					170					175				
Met	Leu	Gly	Glu	Ala	Glu	Glu	Ile	Arg	Asp	Ile	Ala	Arg	Glu	Val	Leu			
			180					185					190					
Lys	Ile	Phe	Gly	Glu	Tyr	Ser	Leu	Thr	Asp	Phe	Ile	Trp	Pro	Leu	Lys			
		195					200					205						
His	Leu	Lys	Val	Gly	Lys	Tyr	Glu	Lys	Arg	Ile	Asp	Asp	Ile	Leu	Asn			
	210					215					220							
Lys	Phe	Asp	Pro	Val	Val	Glu	Arg	Val	Ile	Lys	Lys	Arg	Arg	Glu	Ile			
225					230					235					240			
Val	Arg	Arg	Arg	Lys	Asn	Gly	Glu	Val	Ile	Glu	Gly	Glu	Val	Ser	Gly			
				245					250					255				
Val	Phe	Leu	Asp	Thr	Leu	Leu	Glu	Phe	Ala	Glu	Asp	Glu	Thr	Thr	Glu			
			260					265					270					
Ile	Lys	Ile	Thr	Lys	Asp	His	Ile	Lys	Gly	Leu	Val	Val	Asp	Phe	Phe			
		275					280					285						
Ser	Ala	Gly	Thr	Asp	Ser	Thr	Ala	Val	Ala	Thr	Glu	Trp	Ala	Leu	Ala			
	290					295					300							
Glu	Leu	Ile	Asn	Asn	Pro	Lys	Val	Leu	Glu	Lys	Ala	Arg	Glu	Glu	Val			
305					310					315					320			
Tyr	Ser	Val	Val	Gly	Lys	Asp	Arg	Leu	Val	Asp	Glu	Val	Asp	Thr	Gln			
				325					330					335				
Asn	Leu	Pro	Tyr	Ile	Arg	Ala	Ile	Val	Lys	Glu	Thr	Phe	Arg	Met	His			
			340					345					350					
Pro	Pro	Leu	Pro	Val	Val	Lys	Arg	Lys	Cys	Thr	Glu	Glu	Cys	Glu	Ile			
		355					360					365						
Asn	Gly	Tyr	Val	Ile	Pro	Glu	Gly	Ala	Leu	Ile	Leu	Phe	Asn	Val	Trp			
	370					375					380							
Gln	Val	Gly	Arg	Asp	Pro	Lys	Tyr	Trp	Asp	Arg	Pro	Ser	Glu	Phe	Arg			
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Pro	Glu	Arg	Phe	Leu	Glu	Thr	Gly	Ala	Glu	Gly	Glu	Ala	Arg	Pro	Leu			
				405					410					415				
Asp	Leu	Arg	Gly	Gln	His	Phe	Gln	Leu	Leu	Pro	Phe	Gly	Ser	Gly	Arg			
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Arg	Met	Cys	Pro	Gly	Val	Asn	Leu	Ala	Thr	Ser	Gly	Met	Ala	Thr	Leu			
		435					440					445						

Leu Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln  
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Gly Gln Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg  
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Ala Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu  
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Ala Arg Ile

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 gatccgcaag ttcccttaggg ctatggccca aggcgcagag gcacggaagc cccttgactt 480  
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Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp Leu  
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Ser	Lys	Lys	His	Gly	Pro	Leu	Phe	Ser	His	Tyr	Phe	Gly	Ser	Met	Pro	50	55	60
Thr	Val	Val	Ala	Ser	Thr	Pro	Glu	Leu	Phe	Lys	Leu	Phe	Leu	Gln	Thr	65	70	75
Asn	Glu	Ala	Thr	Ser	Phe	Asn	Thr	Arg	Phe	Gln	Thr	Ser	Ala	Ile	Arg	85	90	95
Arg	Leu	Thr	Tyr	Asp	Ser	Ser	Val	Ala	Met	Val	Pro	Phe	Gly	Pro	Tyr	100	105	110
Trp	Lys	Phe	Val	Arg	Lys	Leu	Ile	Met	Asn	Asp	Leu	Leu	Asn	Ala	Thr	115	120	125
Thr	Val	Asn	Lys	Leu	Arg	Pro	Leu	Arg	Thr	Gln	Gln	Ile	Arg	Lys	Phe	130	135	140
Leu	Arg	Ala	Met	Ala	Gln	Gly	Ala	Glu	Ala	Arg	Lys	Pro	Leu	Asp	Leu	145	150	155
Thr	Glu	Glu	Leu	Leu	Lys	Trp	Ala	Asn	Ser	Thr	Ile	Ser	Met	Met	Met	165	170	175
Leu	Gly	Glu	Ala	Glu	Glu	Ile	Arg	Asp	Ile	Ala	Arg	Glu	Val	Leu	Lys	180	185	190
Ile	Phe	Gly	Glu	Tyr	Ser	Leu	Thr	Asp	Phe	Ile	Trp	Pro	Leu	Lys	His	195	200	205
Leu	Lys	Val	Gly	Lys	Tyr	Glu	Lys	Arg	Ile	Asp	Asp	Ile	Leu	Asn	Lys	210	215	220
Phe	Asp	Pro	Val	Val	Glu	Arg	Val	Ile	Lys	Lys	Arg	Arg	Glu	Ile	Val	225	230	235
Arg	Arg	Arg	Lys	Asn	Gly	Glu	Val	Val	Glu	Gly	Glu	Val	Ser	Gly	Val	245	250	255
Phe	Leu	Asp	Thr	Leu	Leu	Glu	Phe	Ala	Glu	Asp	Glu	Thr	Met	Glu	Ile	260	265	270
Lys	Ile	Thr	Lys	Asp	His	Thr	Lys	Gly	Leu	Val	Val	Asp	Phe	Phe	Ser	275	280	285
Ala	Gly	Thr	Asp	Ser	Thr	Ala	Val	Ala	Thr	Glu	Trp	Ala	Leu	Ala	Glu	290	295	300
Leu	Ile	Asn	Asn	Pro	Lys	Val	Leu	Glu	Lys	Ala	Arg	Glu	Glu	Val	Tyr	305	310	315
Ser	Val	Val	Gly	Lys	Asp	Arg	Leu	Val	Asp	Glu	Val	Asp	Thr	Gln	Asn	325	330	335
Leu	Pro	Tyr	Ile	Arg	Ala	Ile	Val	Lys	Glu	Thr	Phe	Arg	Met	His	Pro	340	345	350
Pro	Leu	Pro	Val	Val	Lys	Arg	Lys	Cys	Thr	Glu	Glu	Cys	Glu	Ile	Asn	355	360	365

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 Glu Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu Asp  
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Pro	Asn	Pro	Pro	Ser	Pro	Xaa	Pro	Arg	Leu	Pro	Phe	Ile	Gly	His	Xaa	35	40	45	
His	Leu	Leu	Lys	Asp	Lys	Leu	Leu	His	Tyr	Ala	Xaa	Ile	Asp	Leu	Ser	50	55	60	
Lys	Lys	His	Gly	Pro	Leu	Phe	Ser	Xaa	Xaa	Phe	Gly	Ser	Met	Pro	Thr	65	70	75	80
Val	Val	Ala	Ser	Thr	Pro	Glu	Leu	Phe	Lys	Leu	Phe	Leu	Gln	Xaa	Xaa	85	90	95	
Glu	Ala	Thr	Ser	Phe	Xaa	Thr	Arg	Phe	Gln	Thr	Ser	Ala	Xaa	Arg	Xaa	100	105	110	
Leu	Thr	Tyr	Asp	Xaa	Xaa	Val	Ala	Xaa	Xaa	Pro	Xaa	Gly	Pro	Tyr	Trp	115	120	125	
Xaa	Phe	Val	Arg	Lys	Leu	Ile	Met	Asn	Asp	Leu	Xaa	Asn	Ala	Thr	Thr	130	135	140	
Val	Asn	Xaa	Leu	Arg	Pro	Leu	Arg	Thr	Gln	Gln	Ile	Arg	Lys	Xaa	Leu	145	150	155	160
Arg	Xaa	Met	Ala	Gln	Xaa	Ala	Glu	Ala	Xaa	Lys	Pro	Leu	Asp	Xaa	Thr	165	170	175	
Glu	Glu	Leu	Leu	Lys	Trp	Xaa	Asn	Ser	Thr	Xaa	Ser	Met	Met	Xaa	Leu	180	185	190	
Gly	Glu	Ala	Glu	Glu	Ile	Arg	Asp	Ile	Ala	Arg	Glu	Val	Leu	Lys	Ile	195	200	205	
Xaa	Gly	Glu	Tyr	Ser	Leu	Thr	Asp	Phe	Ile	Xaa	Pro	Leu	Lys	Xaa	Leu	210	215	220	
Lys	Val	Gly	Lys	Tyr	Glu	Lys	Arg	Ile	Asp	Asp	Ile	Leu	Asn	Lys	Phe	225	230	235	240
Asp	Pro	Val	Val	Glu	Arg	Val	Ile	Lys	Lys	Arg	Arg	Xaa	Ile	Val	Arg	245	250	255	

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 275 280 285  
 Ile Thr Lys Xaa Xaa Ile Xaa Gly Leu Val Val Asp Xaa Phe Ser Ala  
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 Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro  
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